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Influence of sodium arsenate (V) on the content of nitrogen-containing compounds in soil

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Abstract

© Research India Publications. Arsenic is one of the most toxic elements, which natural content exceedance leads to serious changes in soil characteristics. It is known that the element affects the enzymatic activity of soil, the composition and amount of soil microorganisms and other biological properties. Influencing the soil microorganisms and their ability to mineralization of organic matter, arsenic can also cause a change in the content of nitrogen-containing compounds. The incubation experiment allowed us to determine the effect of arsenic, applied in the form of various doses of sodium arsenate (V) to the soil (0, 5, 50, 200, 1200 mg/kg) on the amount and activity of microorganisms, and the content of compounds such as free amino acids, the ammonium and nitrate nitrogen. As the content of these compounds depends largely on the activity of microorganisms, we also considered in our study such indicators as the amount of microorganisms and substrate-induced soil respiration. The content of free amino acids and nitrate nitrogen correlated significantly with indicators of the amount of microorganisms. The investigation results also showed that the vital activity of arsenic-tolerant microorganisms is probably one of the main factors influencing the content of free amino acids and nitrates in the arsenic-contaminated soil.

Keywords

Ammonia, Arsenic, Free amino acids, Incubation experiment, Nitrates